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THE BIRDFISH

SPRING 2017

Churchill Northern Studies Centre
Newsletter

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Researching the polar bears
of Western Hudson Bay

Heavy Whites

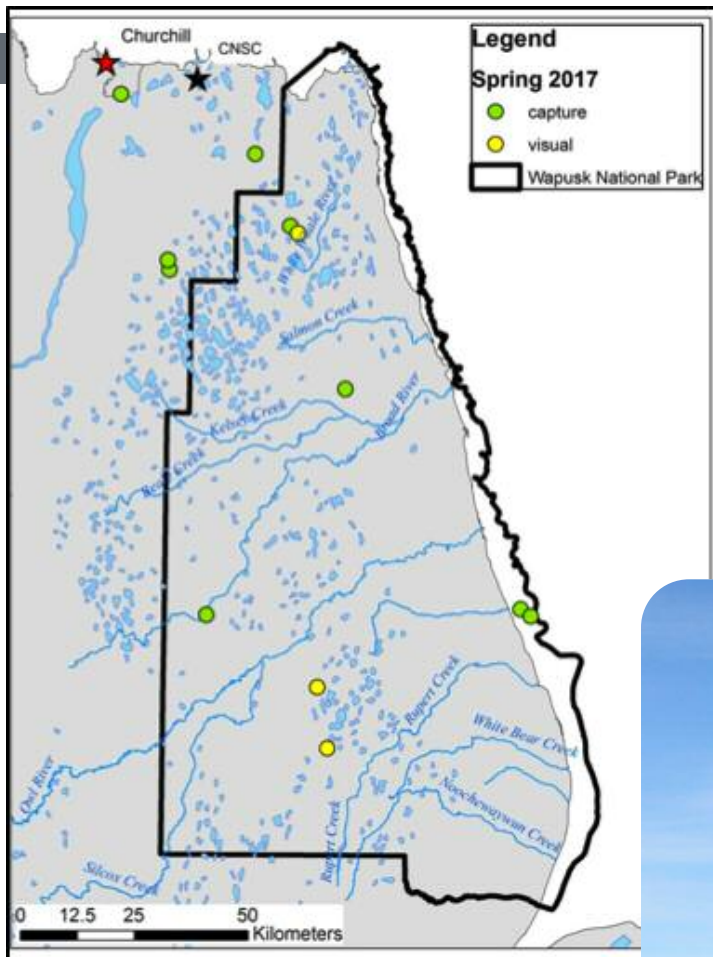
Photo: Stephanie Puleo

DR. NICK LUNN, A RESEARCH SCIENTIST WITH ENVIRONMENT AND CLIMATE CHANGE CANADA, CONDUCTS POLAR BEAR RESEARCH EACH SPRING AS PART OF A LONG-TERM STUDY EXAMINING POPULATION dynamics, status, and health of the Western Hudson Bay (WH) subpopulation in relation to environmental change. Each summer Hudson Bay becomes ice free, which forces the entire WH subpopulation on shore. Polar bears show a high degree of site fidelity and return to northeastern Manitoba each year. Bear activity is greatly reduced while onshore; when the bay refreezes, all bears, except pregnant females, return to the sea ice to resume hunting seals. Pregnant females remain onshore in traditional denning areas, primarily within Wapusk National Park, where they enter maternity dens between late August and October. Female Polar bears give birth in December to early January and emerge from these dens between mid-February to late March. After a few days to a few weeks at the den site, adult females travel back to the sea ice accompanied by their young cubs.

Spring fieldwork is conducted to capture a sample of adult females and cubs before they return to the sea ice. These adult females have been onshore for upwards of 8 months

with no access to seals since the previous summer and have used stored energy (fat) to meet their own energetic requirements, produce 1-3 cubs, and produce/provide milk for their cubs. Fieldwork allows us to look at how timing of sea ice breakup and health of bears the previous year is reflected in both productivity (e.g., litter size, sex ratio, body mass of cubs) and also in the condition of adult females prior to their being able to hunt again. This data also provide insight into cub survival between spring and the upcoming fall.

Between February 25 and March 18, 2017, Dr. Nick Lunn and David McGeachy flew over 3,700 km in 36.2 hours. During that time they captured 9 family groups and observed three other family groups that could not be captured due to the extreme cold (Figure 1). Of the 12 family groups either handled or seen, 8 (67%) had twins, 3 (25%) had singletons, and 1 (8%) had triplets. The mean weight of male cubs ($n=7$) was 11.6 kg (SE ± 1.6) and the mean weight of female cubs ($n=9$) was 9.3 kg (SE ± 1.43). The lightest cub was female and part of the triplet litter; she weighed only 2.5 kg, which is the lightest cub ever weighed in the spring in western Hudson Bay as part of this research. By comparison, the heaviest cub was a male from a single cub litter, and weighed 20.3 kg; he was the heaviest spring cub weighed in western Hudson Bay since 1987. ❄️



△
Figure 1. A map of the capture and sighting locations of family groups in Spring 2017



▽
Figure 2. Dr. Nick Lunn weighs a 3-month-old cub in Wapusk National Park



WANT TO LEARN MORE?

Environment and Climate Change Canada Polar Bear Conservation: ec.gc.ca

Nick Lunn's profile:

<http://ec.gc.ca/scitech/default.asp?lang=En&n=F97AE8341&xsl=scitechprofile,form&formid=9617A9C7-98B9-42DA-B999-F3CBC309F029>

Recent publications:

Bechshoft, T., Derocher, A.E., Richardson, E., Lunn, N.J. and St. Louis, V.L. 2016. Hair mercury concentrations in western Hudson Bay polar bear family groups. *Environmental Science & Technology* 50:5313–5319.

Lunn, N.J., Servanty, S., Regehr, E.V., Converse, S.J., Richardson, E. and Stirling, I. 2016. Demography of an apex predator at the edge of its range – impacts of changing sea ice on polar bears in Hudson Bay. *Ecological Applications* 26:1302–1320.

Sciullo, L., Thiemann, G.W. and Lunn, N.J. 2016. Comparative assessment of metrics for monitoring the body condition of polar bears in Western Hudson Bay. *Journal of Zoology* 300:45–48.

Artist in Residence Profiles

FOR THE PAST 3 YEARS, THE CNSC HAS HOSTED ARTISTS AS PART OF AN ARTIST IN RESIDENCE PROGRAM ESTABLISHED IN CONJUNCTION WITH THE MANITOBA ARTS COUNCIL

Lillian Bonin

In early February, I boarded a train to Churchill from Winnipeg wearing a new, very warm coat and enormous Sorel boots. I arrived armed with watercolours, pencils, two digital cameras and two film cameras at the CNSC for a two-week artist residency funded and supported by the Manitoba Arts Council and the Centre. The proposal I had submitted for consideration by the jury was a photo-based exploration of landscape and light, as well as the "idea" of the North with reference to Canadian identity. As a first time visitor to the North, the geography provided countless opportunities for ideas and



exploration. I also proposed that I would continue my series of photographs in darkness as I thought I would find a place with subdued light. Instead, I found the opposite, I have never been to a place with so much light: the full blood red moon rising over the subarctic, the star-filled sky, the aurora and all light

reflecting on the snow. For two weeks, the light guided me, at dawn I waited for the first colors to reveal themselves and as I watched the sunrise, I was in awe of how long the colors remained in the sky and the way the ice crystals refracted and reflected the light. I followed the sun's path as it crossed my horizon, always in my view, and set slowly at the end of the day. The white snow provided a multitude of blues, this coupled with the extraordinary sky created a space that I am still trying to define. I took thousands of photographs inside and outside from my perch at the Research Centre. Freezing camera batteries, frosted viewfinders and ice-covered long lenses presented a challenge as I ventured out. I painted a series of small watercolours that explored the light and the blurring of the horizon. The wind played a role in my research as it obliterated the horizon and opened up the idea of the blurring of lines in identity as well as referencing the fragility and resilience of nature. This idea was reinforced by the lectures on climate change that I attended at the center. Another concept I started to work with in Churchill was, "what is left behind", as I noted that a rocket range, a few chairs, a ship, and Camp 10 were a few of abandoned tangible elements. I shared an evening presentation on my art practice with co-artist Genevieve Levasseur, which offered the opportunity to discuss my art process with the researchers, staff and volunteers at the center. I was grateful for the opportunity to work in the welcoming CNSC community; where daily I collected data not only on the land, but also with the staff, volunteers and guests who shared their experience. Thanks again for all your support! ❄️

Lillian Bonin

Genevieve Levasseur

I'm thrilled to have been able to experience Churchill! I made the most of my brief stay in order to return south to Winnipeg, and create a body of work embodying Churchill.

I am a visual artist and I delight in the use of natural materials, and have several works painted with site-specific mud. I like the idea of depicting a place, by using the place itself! The CNSC staff had put aside Churchill sediment the previous fall in anticipation of my residency, as the ground was frozen when I arrived in February.



The beauty of the barren pastel landscape and its skies struck me, as well as the dangerous daily weather. For a Winnipegger who thought she knew cold, it was humbling.

Despite bringing a suitcase dedicated entirely to art supplies for "my two weeks of down time", my days were filled with opportunities to learn and experience.

At the CNSC, I saw first hand the research being done. I was privy to evening lectures and seminars, and witnessed the coming and going of the researchers on skidoos and in helicopters, as they gathered water and ice samples from the Hudson Bay, as well as pine needles and snow data inland.

In town, I sat down with the executive director of the Town of Churchill, Cory Young, and talked about different issues and projects in the works for the community and region. There is optimism and growth for the future of Churchill.

I made sure to tour the Complex, and visit the museums to see some of the significant pieces in their collections. It was also important I pay my respects at the cemetery, after reading "Night Spirits", an eye-opening account of the tragedies suffered by the Sayisi Dene.

There is plenty of excitement in the north during the winter season. I had the privilege of flying over the iconic Ithaca shipwreck on the Hudson's Bay, took a ride by dogsled and skidoo, snowshoed, and even saw arctic fox and a snowy owl. And of course, February is aurora borealis season. Witnessing the sky illuminated with dancing light was indeed a spectacle.

I only had time to paint on my last day there. I needed to do a test with the sediment I had processed the week prior, and wanted to leave a painting in appreciation to the CNSC for hosting an artist!

Growing up in Winnipeg there is a certain mystique around Churchill, as despite being geographically close in proximity, its isolation makes it more challenging to reach. I feel fortunate to have finally experienced Churchill, to see the Hudson Bay, and I hope to impart some of what I took in through my next series of mud paintings. ❄️

Genevieve Levasseur

www.genevievegallery.com

CNSC Winter-Spring Subarctic Science Showcase

Presented By: **Innovation150** and **CNSC**



Our Winter-Spring Subarctic Science Showcase focuses on connecting the local community as 'Citizen Scientists' with active research projects in the area. From snowpack sampling in Wapusk National Park to venturing onto the Hudson Bay sea-ice, Churchill residents participating in these events learn first-hand about innovative data collection techniques used in terrestrial and aquatic scientific studies.

Notre Exhibition Hiver-Printemps Sub-Artique se concentre sur la connexion de la communauté locale en tant que « citoyens scientifiques » avec des projets de recherche actifs dans la région. De l'échantillonnage des paquets de neige dans le parc national de Wapusk pour s'aventurer sur la glace de mer de la baie d'Hudson, les résidents de Churchill participant à ces événements apprennent de première main les techniques novatrices de collecte de données utilisées dans les études scientifiques terrestres et aquatiques.

In support of providing free youth community engagement activities, Churchill Northern Studies Centre (CNSC) had 4



Junior Canadian Ranger Dania Meeko and Dr. LeeAnn Fishback taking measurements in a snow pit. Photo: Canadian Ranger Jill Larkin

Ranger Junior Canadien Dania Meeko et Dr LeeAnn Fishback prenant des mesures dans une fosse à neige. Photo courtoisie de Jill Larkin, Ranger Canadien



CNSC staff demonstrating to the Churchill Junior Canadian Rangers how to do a snow pit. Photo: Canadian Ranger Jill Larkin

Le personnel de CNSC démontre aux Rangers Junior Canadien de Churchill comment faire une fosse à neige. Photo courtoisie de Jill Larkin, Ranger Canadien

staff travel approximately 40km on snowmobiles to Nestor 1 Research Station in Wapusk National Park on Monday March 27, 2017. There the CNSC staff met up with the local group of Junior Canadian Rangers (10 youth + 4 adults) who were on a 4-day winter training exercise. Everyone then travelled as one team by snow machines visiting 3 different field sites. Snow sampling was conducted at each site which consisted of 1 snow pit and taking 60 snow cores. At each snow pit, the Junior Canadian Rangers joined CNSC Scientific Coordinator, Dr. LeeAnn Fishback, as she explained how to take the temperature, the depth, the density and how to characterize the snow layers. Then the Junior Canadian Rangers helped with the measurements of the snow cores.

En support à la mise en place d'activités d'engagement communautaire pour les jeunes, 4 employés du Churchill Northern Studies Center (CNSC) ont parcourus environ 40km en motoneige jusqu'à la station de recherche Nestor 1 le lundi 27 mars. Ils y ont rencontré le groupe local des Rangers Junior Canadien (10 jeunes et 4 adultes) qui eux étaient en entraînement à l'hiver pour 5 jours. Ils ont par la suite visité, en se promenant avec une équipe par motoneige, 3 différents sites. L'échantillonnage de neige a été fait à chaque site, celui-ci consistant en une fosse dans la neige ainsi que 60 carottes de neige. À chaque fosse, Rangers Junior Canadien joignaient le Dr LeeAnn Fishback, coordonnateur en science au CNSC, pour qu'elle explique comment prendre la température, la profondeur, la densité et comment caractériser les différentes couches de neige de la fosse.

More community engagement science programming will be scheduled throughout 2017 as we celebrate the importance of Canadian Science Innovation.

De plus en plus de programmes de sciences de l'engagement communautaire seront programmés tout au long de l'année 2017 alors que nous célébrons l'importance de l'innovation scientifique canadienne. ❄️



Junior Canadian Rangers Maala Meeko and Nickia McIvor snow coring in Wapusk National Park. Photo: Canadian Ranger Jill Larkin

Ranger Junior Canadiens Maala Meeko et Nickia McIvor faites les carottes de neige dans le Parc National de Wapusk. Photo courtoisie de Jill Larkin, Ranger Canadien

Continued on Pg. 7

featured course

Lords of the Arctic October

THIS SPECIAL SESSION IS INSTRUCTED BY DR. STEPHEN PETERSEN HEAD OF CONSERVATION AND RESEARCH FOR THE ASSINIBOINE PARK ZOO. His recent research projects have focused on arctic marine mammals (polar bears and seals) and he will engage participants with citizen science projects to help monitor these arctic species (and maybe spot a beluga whale too!) As with our other LOA sessions you will witness the annual migration of Churchill's polar bears. In October and November, polar bears congregate in the Churchill area to await the return of the sea ice and access to their preferred prey – the ringed seal. – **Book Soon!** ❄️

BOOK TODAY!

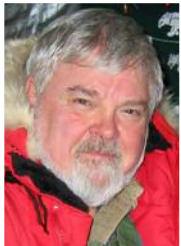


For a complete listing of our upcoming courses, please visit our website: churchillscience.ca/events



NEWS

Thirty Years a Star!



Aurora Season 2017 marked the 30th and final year that Roger "Starman" Woloshyn served as instructor for our Northern Lights learning vacations. After his long tenure as a CNSC instructor, Roger is retiring from the position. Roger was instrumental in establishing the CNSC and Churchill as an Aurora viewing destination; he was the instructor when we ran our first course

30 years ago for just a few participants!

Roger has had a long commitment to youth education, and always took time to teach the youth of Churchill about aurora and astronomy. Below is a letter from a Grade 5 student that the CNSC received this year. There is no better testament to Roger's passion for astronomy and education than his careful response.

November 30, 2016
Dear Churchill Northern Studies Centre,
I am in the 5th grade. I am studying and creating an independent research project about aurora lights. I found out about auroras when I was watching the LG OLED TV event in Iceland. It had an aurora showing and I wanted to learn more about polar lights. I would appreciate if you could answer the questions enclosed for me to use in my report. I'm sure your knowledge on auroras will improve my report.
Enclosed is a self-addressed stamped envelope for your convenience and a paper airplane to play with. I would be honored to include your entry to my report. I appreciate you take [sic] your time to write back. Thanks again for helping me.

February 15, 2017
Your inquiry concerning northern lights has come to me. I'm Roger Woloshyn, an instructor in Northern Lights and Observational Astronomy at the Churchill Northern Studies Centre (CNSC). I have been travelling to Churchill for 30 years to present courses to visitors, although the reason for visitors to come to CNSC is not so much for the course, but rather to see spectacular aurora.
Please keep in mind that three elements are required to successfully view aurora: clear skies, dark moonless nights and, of course, aurora. Northern lights appear in Churchill about 300 nights a year. Winter has very long nights and the cold northern temperatures usually provide for clear skies free of ice fog or cloud. For those reasons and for reasons of accessibility, Churchill is an ideal location for viewing and photographing the northern lights.
I hope that in your research you mention the web site spaceweather.com which is a premier source of information for solar wind conditions and a prediction center for aurora observation.
I wish you clear skies and hope that at some time in the future you may come to Churchill Manitoba and visit our facility.
Sincerely,
Roger Woloshyn
Northern Lights Instructor and Guide



Continued from Pg. 5

CNSC Research Technician Fiona LeTaro supervises Junior Canadian Rangers Terry Palmer, Maala Meeko and Captain MacDonald while they snow core. Photo: Jill Larkin

La technicienne en recherche de CNSC Fiona LeTaro supervise les Ranger Juniors Canadiens Terry Palmer, Maala Meeko et le Capitaine MacDonald alors qu'ils neigent des carottes de neige. Photo courtoisie de Jill Larkin, Ranger Canadien

Questions for Correspondence / Answered by: Roger Woloshyn

- Q:** Do you think another "Carrington" class solar flare will happen during a solar max?
A: It is not predictable but it is likely to happen. Large solar flares are happening all the time.
- Q:** What is an estimate of how many times you're seen an aurora?
A: Well over a hundred
- Q:** What country is best for viewing aurora in your opinion?
A: CANADA. In 1957 the International Geophysical year selected Churchill as the site of a rocket range to study the aurora. The CNSC is on that site so naturally I would think it best.
- Q:** When did you first see an aurora? How old were you and what year?
A: Living in southern Manitoba aurora shows up about 6 times a year. I don't recall when I first saw it, but my first time in Churchill was in 1976.
- Q:** How do you think studying northern lights is exciting?
A: My biggest thrill is to show visitors the aurora. It is a powerful experience much like a total solar eclipse or the appearance of a large comet. People remember the experience for a lifetime.

Thank you for your years of service Roger, and enjoy your retirement! ❄️



Our New Staff Member

The CNSC is pleased to welcome Danielle Thomas as our new assistant director

A lifetime northern Manitoban, Danielle, relocated from The Pas Manitoba to Churchill in September 2015 with her fiancé Jeff and their 2 dogs - Sophie and Riley. Danielle brings with her skills from working in tourism and retail in both The Pas and Churchill. She is enjoying being a part of the diverse team of staff at the CNSC and supporting smooth operations. Outside of work she enjoys spending time with family and friends, kayaking, fishing, hunting and walking her golden retrievers. ❄️

Established in 1976, the Churchill Northern Studies Centre is an independent, non-profit research station located along the western coast of Hudson Bay.

staff board of directors

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 Richard Bello (Treasurer) – Member-at-Large
 Judy Wilson (Secretary) – Member-at-Large
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to understand and sustain the north

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- Fleet & Facilities Supervisor
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- Maintenance Assistant
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The Birdfish Newsletter is produced by CNSC staff with assistance from researchers and program participants.

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Are you a CNSC member and would you like a printed copy of our 2016 annual report? Please contact cnscc@churchillscience.ca and we will ship one to you!



Join us in Sustaining the North for the Future

4
FOR
40

The CNSC Turned 40 in 2016!

It's an incredible time to be a part of this organization. For the last four decades we have welcomed up to 200 researchers per year, facilitated cutting-edge scientific studies that catalyze change, hosted the public in hands-on education opportunities, been a hub for culture and heritage and helped support Churchill's economy. We even moved into a beautiful new

facility. The board and staff of the CNSC are grateful to everyone who has contributed to the success of the Centre over the past 40 years. We are leaps and bounds from where we began, and we're excited for the future.

What is 4 for 40?

We have launched a campaign to raise \$4 Million to celebrate 40 years of leading research and education in the Canadian sub-Arctic! We will focus on expanding and enhancing our school and youth programming, so that we can be a better learning centre, our Northern Research Fund, so that we can be a better research facility and our Birdfish Endowment Fund, so we can better plan for the future. We want to be the best that we can possibly be, and we can't wait for you to join us to help achieve this.

contribute

Your contribution is still needed to ensure that WE meet all the expectations that YOU, our participants, researchers, educators, donors and members have for the future of the CNSC. No contribution is too small. Every gift counts.

How to contribute:

Visit our website www.churchillscience.ca – click the "Donate Now" button to donate securely through our partner Canada Helps.

Visit our Canada Helps Giving Page – <https://www.canadahelps.org/en/charities/churchill-northern-studies-centre/>

Contact Kim at 204 675 2307 or daley@churchillscience.ca – and she will process your donation personally.

Clip the form below and mail to CNSC, Box 610, Churchill, MB, ROB OE0, Canada



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Contact Kim at 204 675 2307 or daley@churchillscience.ca and say I want to save trees! ❄️



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We rely on our membership to provide the support and funding needed to make the CNSC a place for world class research and education programs in the Canadian subarctic. Join us now and be part of these exciting times at the CNSC. Already a member? Use this form to ensure your membership remains current. Renew or Join today!

Name: _____ E-mail: _____ Tel: _____

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NEW* membership RENEW* my membership I would like to receive my copy of *The Birdfish* in electronic form

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I want to support the CNSC Please use my donation of \$ _____ for:

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ROB OE0 Canada
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Total amount \$ _____

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Visa MasterCard American Express

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Cover photo: David Boldue

We appreciate your support of the Churchill Northern Studies Centre. Your donations support research and education that makes the world a better place. Thank you very much.